9
Safety

The Safety Element of the General Plan is to provide information "for the protection of the community from unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, and dam failure; slope instability leading to landslides, subsidence, and other geological hazards; flooding; hazardous material accidents; and wildland and urban fire" (Government Code §65302 {g}). One of the City's highest priorities is the protection of its residents from geologic and soils hazards, hazardous materials, flooding, and fires.

9.1 GEOLOGIC, SEISMICITY AND SOILS HAZARDS

GEOLOGY

The Planning Area is located in the East Bay Hills of the Coast Ranges in the western part of Contra Costa County, California. The East Bay Hills are part of a block of folded and faulted Upper Cretaceous age (about 62 to 98 million years ago) marine sedimentary rocks of the Great Valley Sequence. The hill overlay is formed from younger rocks, uplifted between the Hayward and Calaveras fault zones. The Planning Area includes a series of northwest-trending ridges and valleys, and is underlain by Tertiary (about 2 to 62 million years ago) marine and non-marine sedimentary rocks.

SEISMICITY

The major active fault with rupture potential is the Calaveras Fault that lies parallel to and just west of San Ramon Valley Boulevard. The California Legislature has established an Alquist-Priolo Earthquake Fault Zone along the fault, requiring detailed studies of rupture hazards prior to construction. Two smaller faults, the Dublin Fault and the Bollinger Fault, also traverse portions of the City and its Sphere of Influence. While these faults are not regarded as active, evidence is inconclusive. Minor, presumed inactive, faults intersect active or potentially active faults. Any movement of the master fault could trigger adjustments on minor cross faults or adjacent subparallel faults.

The United States Geological Survey and the State Department of Conservation's Division of Mines and Geology prepare geologic maps and reports, which should be consulted for locations of additional minor faults. The existence of any faultline, whether it is inside or outside of an earthquake fault zone, should be given serious consideration and thorough evaluation prior to any development decisions.

The Planning Area is dominated by generally northwest-trending, broad, rounded ridges, and intervening valleys with incised drainages and steep side slopes. Sandstone bedrock crops out locally on ridge crests and underlies upper hillslopes at shallow depths. Northern and eastern portions of the Planning Area are underlain by non-marine conglomerate, sandstone, and mudstone. Alluvial terraces are locally present along major drainages. Soils are thin to non-existent on ridges, crests, and hillslopes, thicken toward the base of hillslopes, and generally are thick in colluvium-filled swales.

SOILS

Soils within the San Ramon Planning Area are primarily clays with high shrink-swell potential, as well as high and severe erosion hazards on slopes where bare soil is exposed. Slopes range from level and gently sloping along the valley floor to slopes exceeding 75 percent in hilly areas where rock outcrops occur.

The clays and silts within the Planning Area would not be likely to liquefy in the event of a large earthquake, but may be subject to other seismically induced ground failures such as ground lurching. Much of the Tassajara Valley and Bollinger Canyon areas are steeply sloped, with existing and potential new landslides posing concerns for potential new development in these areas.

Figure 9-1 illustrates the geotechnical hazards in San Ramon.

The Bay Area's seismic activity requires that the City be vigilant with regard to safety. Crucial measures may include the avoidance of geologic and seismic hazards in building, and the adequate provision of public information regarding seismic safety.

In the steeper portions of the Planning Area, such as Bollinger Canyon, the Westside, and Tassajara Valley, active landslides (debris flows, earth flows, and slumps) and severe erosion potential represent major constraints to development. Any development in valley floors would require careful siting, grading, and building techniques.

GUIDING POLICY

9.1-G-1 Minimize risks of property damage and personal injury posed by geologic and seismic hazards.

IMPLEMENTING POLICIES

9.1-I-1 Review proposed development sites at the earliest stage of the planning process to locate any potential geologic or seismic hazards.

Following receipt of a development proposal, engineering staff shall review the plans to determine whether a geotechnical review is required. If the review is required, then the applicant shall be referred to geotechnical experts for further evaluation.

9.1-I-2 Prohibit structures intended for human occupancy within 50 feet of an active fault trace.

It is also the City's intent to discourage homes, offices, hospitals, public buildings, and other similar structures over the trace of an inactive fault and to allow uses within setback areas that could experience displacement without undue risk to people and property. Examples of such uses are landscaped areas, parking lots, and noncritical storage. Roads may be built over active faults only where alternatives are impractical and where no utility lines are placed in the right-of-way.

9.1-I-3 Require an independent, registered engineering geologist to review reports submitted by applicants on sites in seismically hazardous areas.

Applicants' geologists, however competent and ethical, may tend to take the viewpoint of their clients. The City's interest should be represented by a fully qualified independent reviewer selected or approved by the City.

9.1-I-4 Require comprehensive geologic and engineering studies of critical structures regardless of location.

Critical structures are those most needed following a disaster or those, that could pose hazards of their own if damaged. They include utility centers and substations, water reservoirs, hospitals, fire stations, police and emergency communications facilities, and bridges and overpasses.

9.1-I-5 Require geotechnical field review during the construction phase of any new development.

Much of the hillsides within the Westside subarea are characterized by thick colluvial soils, which are associated with landslides. While proper grading techniques can effectively remedy this situation, it is important that a geotechnical engineer provide on-site field inspection and testing during construction to ensure compliance with geotechnical recommendations.

9.1-I-6 Require preparation of a soils report as part of the development review and/or building permit process.

The City is underlain by moderately to highly expansive soils that must be taken into account during building design if cracking and settling of structures are to be minimized. The report would not be necessary when soil characteristics are known, and the City's Building Official determines it is not needed.

9.1-I-7 Limit cut-and-fill slopes to 3:1 (33 percent slope) except where an engineering geologist can establish to the City's satisfaction that a steeper slope would not pose undue risk to people and property.

This grading standard is applied to new development throughout the City to reduce the appearance of angled contours and to maintain slope stability. The City encourages less steep slopes wherever possible so that the visual impacts of grading are minimized. Encourage the use of 3D modeling to assure visual mitigation. The San Ramon Valley Fire District should also ensure that emergency access to hillside development is maintained.

9.1-I-8 Blend cut-and-fill slopes with existing contours to avoid the appearance of artificial slopes.

Grading plans should provide variation in horizontal and vertical contours that mimic the surrounding terrain such that development blends with the existing environment and avoids the visual impacts that result from high cut slopes and steep embankments.

9.1-I-9 Provide information and establish incentives for property owners to rehabilitate existing buildings using construction techniques to protect against seismic hazards.

San Ramon requires compliance to the City-adopted Uniform Building Code, which specifies seismic standards for new construction, as well as for additions or expansions to buildings. It is in the community's best interest to do all that is necessary to ensure that all structures meet current seismic standards. Incentives

may include free inspections, assistance in obtaining loans, and possibly reduced fees.

9.1-I-10 Control erosion of graded areas with revegetation or other acceptable methods.

Plant materials for revegetation should not be limited to hydro-seeding and mulching with annual grasses. Trees add structure to the soil and take up moisture while adding color and diversity.

9.1-I-11 Require financial protection for public agencies and individuals as a condition of development approval where geologic conditions indicate a potential for high maintenance costs for areas of public benefit.

The formation of geological hazard abatement districts is one mechanism that can ensure geotechnical mitigation measures are maintained over the long term for areas of public benefit. Financial risks are to be equitably shared among owners and not borne by the City.

9.1-I-12 Maintain and update, as appropriate, the City's emergency preparedness programs, plans, and procedures to ensure the health and safety of the community in the event of an earthquake or other disaster.

The City shall inform community and business leaders and residents regarding all aspects of disaster preparedness, including plans for evacuation and alternative access routes and provisions. The City shall also provide a coordinated emergency response in the event of any local or regional, natural or man-made disaster. This shall be supported by ongoing awareness and training programs in disaster planning and response.

9.1-I-13 Initiate annual public information programs that explain the City's emergency preparedness programs and strongly encourage each household in the City to be self-sufficient for 72 hours after a major earthquake.

House-to-house outreach and neighborhood emergency response training are important elements of disaster preparedness. The public information program should include guidebooks and instruction kits on how to prepare for disasters, how emergency response will be coordinated, and what residents can do to be self-sufficient. Annual disaster exercises also can help hone disaster response capabilities.

9.1-I-14 Encourage continued investigation by State agencies of geologic conditions within the City's Planning Area to promote public awareness of potential geologic and seismic hazards.

The City's requirement for independent review of geologic reports shall consider the most recent available information regarding seismic hazards, including the potential for seismic shaking and fault rupture within the Mt. Diablo fold-and-thrust belt.

9.1-I-15 Encourage the purchase of earthquake insurance.

Earthquake insurance provides a public benefit in that financial aid is often provided swiftly, allowing repair

and rebuilding to proceed quickly and uniformly across the City.

9.1-I-16 Review and update, as appropriate, City Code requirements for excavation, grading and filling to ensure that they conform to currently accepted standards. Recover the costs of this work through grading permit fees.

9.2 HAZARDOUS MATERIALS

Some topics regarding public safety can be dealt with only at a regional level, or fall within the responsibility of public agencies other than the City of San Ramon. The use and transportation of hazardous substances is one example for which public safety depends in large part on the actions taken by the State and Federal governments.

Although San Ramon does have businesses that use hazardous materials, hazardous waste is not generated in large amounts and a waste disposal facility is not likely to be sited in the City. However, a concern exists due to the transportation of hazardous materials along the I-680 corridor.

The State of California's Department of Toxic Substances Control (DTSC) lists all leaking Underground Storage Tank (UST) sites and all solid waste disposal facilities from which there is a migration of hazardous waste. The most recent file published in April 1998 included twelve sites in San Ramon with leaking USTs, most of which were gas stations.

Contaminated sites threaten the quality of the City's groundwater and shall be cleaned through decontamination of soils and filtration of groundwater. Clean-up shall be required in conjunction with development of property or alteration of existing uses.

In San Ramon, waste oil is collected at the curb by the franchised waste hauler, and household hazardous wastes are collected on weekends at various locations throughout the County. Central Contra Costa Sanitary District (Central San) and Mt. View Sanitary District (MVSD) jointly operate Contra Costa County's first permanent Household Hazardous Waste Facility (HHW) located in Martinez. The HHW collection facility collects household cleaners, automotive care products, paint and paint-related products, and garden care and pest control products at no charge for cities in its service area, which includes the City of San Ramon.

Table 9.2-1: Reported Leaking Underground Storage Tanks

Site Name	*Address*
BP	3048 Crow Canyon Road
BP	2350 San Ramon Valley Blvd.
BP Mobil	8998 Alcosta Blvd.
CAO- The Country Club, Cal	End of Bollinger Canyon Road
Chevron	21320 San Ramon Valley Blvd.
Valero	2400 San Ramon Valley Blvd.
Laborers Training Center	21321 San Ramon Valley Blvd.
Popperwell, Wilma Jane	9501 Bella Meade
Short Stop	2109 San Ramon Valley Blvd.
Ultramar	1990 San Ramon Valley Blvd.
Unocal Corporation	12105 Alcosta Blvd.
WDR-Bollinger Canyon LEAC	Bollinger Canyon Road

Source: California Department of Toxic Substances Control, Hazardous Waste and Substances Sites List, 1998.

Pursuant to State law, the City has adopted by reference Contra Costa County's Hazardous Waste Management Plan. The Plan establishes a comprehensive approach to management of hazardous wastes in Contra Costa County, including siting criteria for new waste management facilities, educational and enforcement efforts to minimize and control the hazardous waste stream, and policies to maintain a unified database on businesses that generate waste.

EMERGENCY RESPONSE

To prepare for possible events that could endanger the health and safety of its citizens, San Ramon has taken several steps to provide an immediate response to disasters such as a hazardous materials spill. In cooperation with the Contra Costa County Office of Emergency Services, the City has developed a Multiple Hazard Functional Plan, which addresses the City's response to extraordinary situations associated with large-scale disasters.

The City has also developed the Incident Command System (Emergency Plan) in cooperation with the San Ramon Valley Fire Protection District, the San Ramon Police Department, and the Contra Costa County Office of Emergency Services. The Emergency Plan adds flexibility to the existing Multi-Hazard Functional Plan and at the same time provides a common system that is recognized throughout the State of California as a basis for managing large emergency incidents. In addition, the Twin Valley Mutual Aid Program was created to respond to emergency situations, including hazardous materials spills anywhere in the Tri-Valley region.

In the event of a hazardous materials spill within the City, the Police Department will be the first to respond and assess the situation, followed shortly by fire and emergency medical service personnel. If a spill occurs on the freeway, the California Highway Patrol will call upon the City's resources to assist in identifying, isolating, and if necessary, evacuating the area. In all cases, the Contra Costa County Environmental Health Department shall coordinate containment and mitigation.

GUIDING POLICY

9.2-G-1 Minimize the risk of property damage and personal injury resulting from the production, use, storage, disposal, or transportation of hazardous materials.

IMPLEMENTING POLICIES

9.2-I-1 Promote the reduction, recycling, and safe disposal of household hazardous wastes through public education and awareness. Collection programs should also be expanded.

In San Ramon, waste oil is collected at the curb by the franchised waste hauler, and household hazardous wastes are collected on weekends at various locations throughout the County. Central drop-off facilities could be established as a possible joint venture with surrounding communities such as the City of Hayward and Alameda County.

9.2-I-2 Encourage changes in product development, labeling, packaging, and handling to reduce the amount of hazardous waste generated in daily household activity.

Many over-the-counter products used in the home and yard contain toxic ingredients and pose a health hazard to people and risk to the environment. Proper labeling and packaging helps buyers choose their products, and handle and dispose of them in a safe manner.

9.2-I-3 Conduct a study to determine the desirability and costs associated with establishing a proprietary toxic collection center or a joint venture with an adjoining city.

With the San Ramon Regional Medical Center and its supporting physician and diagnostic businesses, there may well be an opportunity for such a venture to be financially viable. Moreover, with population growth and related increases in consumer use of toxic-generating household items and automotive products, improving access to toxic waste disposal facilities could augment the City's overall recycling programs.

9.2-I-4 Promote the cooperation between police, fire, and emergency medical services, and support the required training of all personnel who may respond to an emergency involving hazardous materials.

Response to emergency situations follows the Incident Command System, ensuring unified command by all emergency response teams. Depending on the incident, the most appropriate agency will be the lead agency and will be supported by the other emergency response teams.

In the event of a hazardous materials spill within the City, the Police Department will be the first to respond and assess the situation, quickly followed by fire and emergency medical service personnel. If a spill occurs on the freeway, the California Highway Patrol will call upon the City's resources to assist in identifying, isolating and if necessary, evacuating the area. In all cases, the Contra Costa County Environmental Health Department coordinates containment and mitigation.

9.2-I-5 Support the formation of a regional hazardous-materials team consisting of specially trained personnel and equipment.

The Tri-Valley Mutual Aid Program was created to respond to emergency situations, including hazardous materials spills anywhere in the Tri-Valley region.

9.2-I-6 Require the clean-up of sites contaminated with hazardous substances.

The California Environmental Protection Agency publishes the Hazardous Waste and Substances Sites List, which identifies properties in the City that have the potential for hazardous materials contamination. Contaminated sites are threats to the quality of groundwater and shall be cleaned through decontamination of soils and filtration of groundwater. Clean-up shall be required in conjunction with new development, reconstruction, property transfer of ownership, and/or the continued operation after the discovery of contamination. Continual business operation may be permitted during the conduct of clean-up or remediation of the contamination as long as the clean-up proceeds in accordance with an approved clean-up plan.

9.2-I-7 Support and implement policies contained in the Contra Costa County Hazardous Waste Management Plan that encourage and assist the reduction of hazardous waste from businesses and homes in San Ramon.

9.2-I-8 Require businesses generating hazardous waste to pay necessary costs for local implementation of programs specified in the County Hazardous Waste Management Plan, as well as the costs associated with emergency response services for a hazardous materials release.

9.2-I-9 Establish an ordinance specifying routes for transporting hazardous materials.

These routes should not pass through residential areas or other sensitive areas. Specific time periods for transport should be established to reduce the impact and accident risk during peak travel periods.

9.3 FLOOD AND STORM DRAINAGE

According to the Federal Emergency Management Agency (FEMA), a majority of Contra Costa County's creeks and shoreline lie within the 100-year floodplain. The potential for a 100-year flood, which represents a one percent chance each year, exists along small segments of San Ramon Creek, San Catanio Creek, and South San Ramon Creek (see Figure 9-2). Development is located in areas where flooding could occur.

Drainage facilities in Contra Costa County are provided by the cities, the County, and the Contra Costa County Flood Control and Water Conservation District (FCWCD). The FCWCD collects special assessments to finance drainage improvements in areas with adopted drainage plans, while drainage improvements in areas outside these drainage plan boundaries are financed through development fees allowed by the Subdivision Map Act.

All storm drainage systems must have adequate flow capacity. Street drainage systems carry storm runoff to the creeks. For the San Ramon Valley north of Norris Canyon Road, Contra Costa County has designed storm drainage improvements that are expected to accommodate creek flows at full development.

The City is generally responsible for maintaining the publicly-owned elements of the flood control system within the incorporated area. In the unincorporated parts of the Planning Area, lands immediately abutting Alamo Creek in Dougherty Valley and Tassajara Creek in Tassajara Valley are within the 100-year floodplain. Neither Dougherty Valley nor Tassajara Valley is currently in a formal drainage area. The maintenance of Dougherty Valley flood control facilities will be undertaken by County Service Area (CSA) M-29. These facilities will be maintained by the City of San Ramon once they are annexed to the City as provided for in the Settlement Agreement.

The City's potential vulnerability to flooding makes the maintenance of the creeks system and the location of structures above the 100-year floodplain important considerations. Maintenance tactics and the grading of land so that buildings remain above the 100-year floodplain should be a priority in areas of new development.

Dougherty Valley's development concept will maintain major creek channels, and graded fill will elevate areas planned for

development above the 100-year floodplain. In addition, the FCWCD and the Contra Costa County Public Works Department have employed flood detention basins and channeling systems to control the flows of both Alamo Creek and Tassajara Creek in the Tassajara Valley, and the FCWCD has performed a preliminary hydrologic study to determine the feasibility of using detention basins to reduce onsite flood peaks after project implementation.

GUIDING POLICY

9.3-G-1 Protect the community from risks to lives and property posed by flooding and stormwater runoff.

IMPLEMENTING POLICIES

9.3-I-1 Eliminate hazards caused by local flooding through improvements to the storm drain system and/or creek corridors.

9.3-I-2 Require new development to prepare hydrologic studies to assess storm runoff impacts on the local and subregional storm drainage systems and/or creek corridors.

Developers shall provide an assessment of a project's potential impacts on the local and subregional storm drainage systems, so that the City can determine appropriate mitigation to ensure that system capacity and peak flow restrictions are not exceeded.

9.3-I-3 Require new development to provide for the perpetual funding and ongoing maintenance of detention basins. Maintenance may be by the City under contract, by a private entity, or by another public agency.

If wetlands are affected, maintenance of detention basins may include mitigation monitoring in compliance with regulatory requirements until such time as these requirements have been met.

9.3-I-4 Establish landscape and maintenance guidelines for required detention basins to ensure that such facilities achieve a look and quality that is consistent with the landscape of San Ramon and applicable regulatory requirements.

Detention ponds provide aesthetic as well as safety benefits. Landscape and maintenance guidelines incorporated into a maintenance manual and ongoing monitoring would ensure that ponds in San Ramon are integral to the look and feel of the City landscape.

9.3-I-5 Encourage all property owners within flood hazard areas to carry flood insurance.

9.4 WILDLAND AND URBAN FIRES

The San Ramon Valley Fire Protection District (SRVFPD) provides fire protection services to the incorporated and unincorporated portions of San Ramon.

The risk of both urban and wildland fires exists in the San Ramon Planning Area (Figure 9-3). This risk is the result of a variety of factors, including: the type of vegetation and ground cover in the Planning Area, the combustibility of certain building materials, ground slope, adequacy of access to fire

suppression services, water supply, water pressure, and weather conditions. The most common sources of urban fires are home heating systems and kitchen appliances. Wildland fires differ from urban fires in that wildland fires typically spread more rapidly, and fire protection services' response times in these areas are slower and water supplies poorer.

Fire hazards in San Ramon are usually created by increases in the number of homes adjoining open space; therefore, much of the threat of wildland fires is due to open grasslands abutting residential developments. Many neighborhoods within the City are located in remote regions and are surrounded by grasslands. As San Ramon continues to expand, more of these urban-rural interface areas are created. This situation creates extreme fire hazards, and San Ramon is committed to planning development, with the help of fire protection agencies, that minimizes the risk of fire to the greatest extent possible.

Due to an extended dry season with low humidity, San Ramon has many days where fire danger is critical. Within the City, fuel loading is light and wildfire hazard is moderate, except in areas adjacent to the City where steep woodland slopes and rolling grassy hills create high to extreme hazards. Areas in San Ramon representing the greatest risk are the Dougherty Valley and Tassajara Valley areas to the east of the City Limit and the wildland areas at the Planning Area's western edge and northwestern corner.

New development will likely create increased fire hazards caused by interactions between open grassland and dense residential development. Therefore, projected development in the City's Planning Area will likely require the construction of fire suppression services facilities for new subareas. The budgeting and timing of such construction should be considered with respect to safety and the pace of new development. Moreover, community design techniques that allow optimal fire services response time should remain a priority.

GUIDING POLICY

9.4-G-1 Minimize the risks to lives and property due to fire hazards.

IMPLEMENTING POLICIES

9.4-I-1 Require site design features and fire retardant building materials to reduce the risk of fire within the City.

The City enforces the Uniform Fire Code and the fire protection agencies review and make recommendations on all development proposals in San Ramon.

9.4-I-2 Require the completion of fire modeling for new development adjacent to high fire risk areas in order to determine which mitigation measures are appropriate to minimize fire hazard.

Many neighborhoods within the City are located in remote regions and are surrounded by open grasslands. This situation creates an extreme fire hazard, and San Ramon is committed to planning development, in cooperation with the fire protection agencies, that minimizes the risk of fire to the greatest extent possible.

9.4-I-3 Work with the Fire Protection District on planning for a new training facility at an appropriate location where neighborhood impacts would be mitigated.

9.4-I-4 Require sprinklers in new homes located more than 1.5-miles from a fire station.

Over the long-run, reduced fire insurance costs make sprinklers a cost-effective investment where wildland fire hazards exist.

9.4-I-5 Require sprinklers in all mixed use development to protect residential uses from non-residential uses, which typically pose a higher fire risk.

Appropriate fire protection measures are necessary in mixed use developments since residential units are typically in close proximity—either above or adjoining—to higher fire load non-residential occupancies, such as retail stores, offices, restaurants, etc.

9.5 SAN RAMON EMERGENCY RESPONSE PLAN

In 1998, the City of San Ramon approved an Emergency Response Plan that addresses potential impacts from a major earthquake, hazardous materials incident, flood, national security emergency, wildfire, landslide, and dam failure. The City's plan is in compliance with existing law. The objectives of the plan are to reduce injury, and loss of life and property through effective management of emergency forces. The Emergency Operations Plan identifies the City's emergency planning, organizational, and response policies and procedures, integrating and coordinating these with other governmental levels when required.

The City's response to disasters is based on four phases including: increased readiness, initial response operations, extended response operations, and recovery operations. The Plan also contains Volume II, Standard Operating Procedures (SOPs). These SOPs contain, in detail, those actions that are necessary to fulfill the department's responsibilities under this plan. Each of the departmental SOPs will include some generic information such as increased readiness activities, procedures for recalling departmental personnel, disaster assignments, and departmental resource lists.

GUIDING POLICIES

9.5-G-1 Use the City's Emergency Response Plan as the guide for emergency management in San Ramon.

IMPLEMENTING POLICIES

9.5-I-1 Maintain and update the City's Emergency Response Plan, as required by State law, to minimize the risk to life and property of seismic and geologic hazards, hazardous materials and waste, and fire.

9.5-I-2 Prepare and disseminate information, including a page on the City's website, about emergency preparedness.

This information should describe how emergency response will be coordinated and how evacuation of residents will proceed.

9.5-I-3 Coordinate regular fire drills with emergency organizations, including City and County Fire, Police, Emergency Medical Service, Public Works, and the California Environmental Protection Agency and require all City staff to be adequately trained to handle emergency situations.